1. INTRODUCTION

This guide has been prepared for the operator of Carrier Transicold refrigeration units. It contains basic instructions for the daily operation of the refrigeration unit as well as safety information, troubleshooting tips, and other information that will help you to deliver the load in the best possible condition.

Please take the time to read the information contained in this booklet and refer to it whenever you have a question about the operation of your Carrier Transicold unit. This manual refers to the standard model. Some options may not appear in it, and in such cases you are requested to consult our Technical Services.

Your refrigeration unit has been engineered to provide long, trouble-free performance when it is properly operated and maintained. The checks outlined in this guide will help to minimize on the road problems. In addition, a comprehensive maintenance program will help to insure that the unit continues to operate reliably. Such a maintenance program will also help to control operating costs, increase the unit's working life, and improve performance.

When having your unit serviced, be sure to specify genuine Carrier Transicold replacement parts for the highest quality and best reliability.

At Carrier Transicold, we are continually working to improve the products that we build for our customers. As a result, specifications may change without notice.

CONTENTS

2.   IDENTIFICATION

Keep the fold out sheet while reading the instructions.

2.1.   Nameplate

Each unit is identified by a nameplate attached to the frame of the unit.The nameplate identifies the complete model number of the unit, the serial number and some other information.

If a problem occurs, please refer to the information on this plate, and make a note of the model and serial number before calling for assistance. This information will be needed when you contact a technician so that he may properly assist you.

The complete nameplate is fixed on the frame (1a) and the Serial Number is fixed on the control box (1b) : easily readable.

2.2.   Noise level sticker (fixed if available)

This sticker indicates the noise level in Lwa (sound power level).

3.   WARNINGS AND PRECAUTIONS

This manual contains safety and service instructions to follow in order to prevent any accident. Some of following stickers have been placed on the product for your **SAFETY**.

BEFORE USING THIS REFRIGERANT UNIT, read carefully all safety information explained in this manual and indicated on the product. Be sure that everybody who will use this refrigeration unit has been trained to use it in a safe way.

DURING THE USE OR MAINTENANCE OF THIS REFRIGERATION UNIT,
the notes on safety are to be considered.

	Personal Protective Equipment : Always use adequate Personal Protective Equipment before doind anything on this refrigerant unit, as explained in this manual.
	Working at height : Take all necessary safety precautions when accessing this refrigeration unit : use safe ladders, working platforms with appropriate guards.
	Automatic start : This refrigeration unit is equipped with Auto-Start/Stop, a valuable fuel saving feature. When this refrigeration unit is set for Auto-start/Stop operation it may start at any time and without warning.

Before servicing refrigeration unit, make sure the main power switch is on the OFF position. Ensure the unit will not restart.

Lock-out / Tag-out can be performed by disconnecting and enclosing :

- The negative battery cable in diesel mode
- The electrical plug in electrical mode.

	Belts and fans :
	This refrigeration unit is equipped with Auto-start/stop, it may start at any time and without warning.
When the unit is running beware of belts and fans that are moving.Before servicing refrigeration unit, make sure the main power switch is on the OFF position.	
Ensure the unit will not restart. Lock-out / Tag-out can be performed as described above.	
When there is protective structure (fan grid or guard for example) make sure they are in place. Never removed them when the refrigeration unit is running.	
Always keep your hands, body parts, clothes, hairs and tools far from moving parts.	

	Electricity :
	When this refrigeration unit is running in electrical operation, some devices are powered up especially in the electrical control box.
	Before servicing refrigeration unit, make sure the main power switch is on the OFF position. Ensure this refrigeration unit is disconnected from the local electrical network.Lock-out / Tag-out can be performed as described above.
	Before working in the electrical control box, it is required to control the lack of tension.
	WHEN IT IS NECESSARY TO WORK IN THE ELECTRICAL CONTROL BOX UNDER TENSION, PEOPLE MUST BE QUALIFIED FOR WORKS UNDER LOW OR HIGH VOLTAGE.
	Always use adequate tools and Personal Protective Equipment when working on electrical devices : safety gloves and safety glasses.

	Power generator :
	Be aware of HIGH VOLTAGE (up to 700V) supplied by the generator as the unit may start automatically. Before servicing the unit, make sure the RUN/STOP switch is in the STOP position. Also disconnect the negative battery cable.
	NEVER dis-assemble the generator : HIGH MAGNETIC FIELD INSIDE !
	Pacemaker holders must stay clear of the unit while operating as the power generator supplies HIGH VOLTAGE AND MAGNETIC FIELD.

	Engine coolant :
	This refrigeration unit is equipped with a pressurised cooling system. Under normal operating conditions, the coolant in the engine and radiator is under high pressure and very hot.
	Coolant is very slippery. It can be harmful in case of ingestion.
	Never remove the cap from a hot radiator when this refrigeration unit is running or immediately after.
	If the cap must be removed, wait at least 10 minutes and then do so very slowly in order to release the pressure without spray.
	In case of leakage, immediatly clean the floor to prevent slipping.
	Avoid contact with the skin and eyes. Always use Personal Protective Equipment when handling engine coolant : safety clothes, safety gloves and safety glasses.

	Refrigerant :
	The refrigerant contained in this refrigeration unit can cause frosbite, severe burns or blindness in case of projection and direct contact with the skin or eyes.
	In contact with flame or heat refrigerant generate toxic gas.
	Refrigerant handling must be done by qualified people.
	Keep any flame, any lighted object or any source of sparks away from the refrigerant unit.
	Always use Personal Protective Equipment when handling refrigerant : safety clothes, safety gloves and safety glasses.
	First aid in case of frost-bite :
	a. Cover up the frost-bitten part.
	b. Quickly warm up the frost-bitten part by dipping it into lukewarm water (not hot). If you don't have water, wrap the injured part in a clean cloth.
	c. If refrigerant fluid has been splashed into your eyes, rinse them immediately with clean water. As a precaution, you are recommended to have a medical examination as well.
	Burning with hot and cold :
	When this refrigeration unit is running or even after, different components can be very cold or hot (exhaust pipe, tubes, coils, receiver, accumulator or engine for example)
	Beware when operating closed from cold or hot components.
	Always use adequate safety gloves when doing any maintenance on this refrigeration unit.
	Cuttings :
	Beware when handling or operating closed from parts that could be sharp (coils, evaporators, clamps for example).
	Always use adequate safety gloves when doing any maintenance on this refrigeration unit.
	Battery :
	This refrigeration unit may be equipped with a lead-acid type battery. When charging the battery normally vents small amounts of flammable and explosive hydrogen gas.
	Projections of acids on the skin or eyes can cause severe burns.
	Keep any flame, any lighted object or any source of sparks away from the battery elements.
	Always use Personal Protective Equipment when handling and charging battery: safety clothes, safety gloves and safety glasses.

	Cooling oil :
	- avoid prolonged or repeated contact with the skin.
	- wash carefully after handling.
	"Low pollution" engine :
	- The TRI-VORTEX-type indirect injection system minimizes exhaust fume pollution.
	- **NEVER START THE ENGINE IN A CLOSED ROOM, EXHAUST GAS IS POISONOUS.**
	- It is colorless and odorless and created by the incomplete combustion of hydrocarbons.
	- **Exhaust gas is poisonous, breathing it in induces drowsiness and may lead to loss of consciousness.**
	The following symptoms indicate exhaust gas has been inhaled :
	- Blackout, intense headache, sudden weakness and sleepiness, vomiting, muscular contractions, beating temples.
	If you feel one of the above mentioned symptoms, go out and breathe fresh air.
	If you notice a noise or modification of the exhaust system, immediately stop the engine and call your service centre for checking and repair.
	Environment :
	Think about protection of environment during all the life of this refrigeration unit.
To prevent environmental damages NEVER release refrigerant in the atmosphere, NEVER throw coolant, oil, battery and chemicals in the nature. It must be recuperate and recycle according to current regulations.	
When disposing this refrigerant unit do it in an environmentally sound way and in accordance with current regulations.	

	CAUTION
	Under no circumstances should anyone attempt to repair the Logic or Display Boards. Should a problem develop with these component, contact your nearest Carrier Transicold dealer for replacement.
Under no circumstances should a technician electrically probe the processor at any point, other than the connector terminals where the harness attaches. Microprocessor components operate at different voltage levels and at extremely low current levels. Improper use of voltmeters, jumper wires, continuity testers, etc. could permanently damage the processor.	
Most electronic components are susceptible to damage caused by electrical static discharge (ESD). In certain cases, the human body can have enough static electricity to cause resultant damage to the components by touch. This is especially true of the integrated circuits found on the truck/trailer microprocessor.	

3.1. Warning stickers maintenance

a. Keep the warning pictograms clean and without any obstruction material.

b. Clean the pictograms with water and soap and wipe them with soft fabric.

c. Replace damaged or missing pictograms with new pictograms available in Carrier network.

d. If a component having a pictogram is replaced by a new one, be sure that the new component has the right pictogram.

e. Place a warning pictogram by applying it on a dry surface. Press to external sides to eliminate air bubbles.

4.   PRODUCT LOADING

Proper air circulation in the insulated box, air that can move around and through the load, is a critical element in maintaining product quality during transport. If air cannot circulate completely around the load, hot spots or top-freeze can occur.

The use of pallets is highly recommended. Pallets, when loaded so air can flow freely through the pallets to return to the evaporator, help protect the product from heat passing through the floor of the truck. When using pallets, it is important to refrain from stacking extra boxes on the floor at the rear of the truck, because this will cut off the airflow.

Product stacking is another important factor in protecting the product. Products that generate heat, fruits and vegetables for example, should be stacked so the air can flow through the product to remove the heat; this is called "air stacking" the product. Products that do not create heat, meats and frozen products, should be stacked tightly in the center of the box. All products should be kept away from the sidewalls of the body, allowing air to flow between the body and the load; this prevents heat filtering through the walls from affecting the product.

It is important to check the temperature of the product being loaded to ensure that it is at the correct temperature for transport. The refrigeration unit is designed to maintain the temperature of the product at the temperature at which it was loaded; it was not designed to cool a warm product.

SOME ADVICE

Before loading

- Pre-cool the inside of the insulated body by lowering the temperature for about 15 minutes.

- Evacuate the humidity existing inside the box by carrying out a manual defrost. This can only take place when enabled by the defrost thermostat (box temperature lower than 3°C during pulldown and 8°C during heating.

- Evaporator fans are protected by safety grills. In the event of heavy duty use of the unit, ice can accumulate on the grills. It is therefore recommended to clean them regularly by means of a small brush. The operation **MUST** be done when the unit has been SHUT DOWN.

When loading

- To be carried out with the unit stopped.

- It is recommended to open doors as little as possible to avoid the intake of hot air and humidity.

- Select the temperature by means of the thermostat, according to the transported goods.

- Check the internal temperature of the goods being loaded (using a probe thermometer).
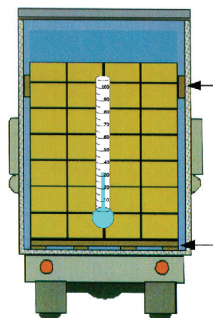
Load spacers

Load on pallets

- Take care not to obstruct the air intakes on the evaporator section and the ventilation ducts.

- Leave a free space of about :

  - 6 to 8 cm between load and frontwall,

  - 20 cm between the top of the load and the roof,

  - between the floor and the load (gratings, pallets).

- Do not forget to close the doors.

- Before closing the doors, check your load once more and see that nobody is shut inside the box.

OPTIONS FOR INSULATED BODIES

- **Mobile partition**

The mobile partition must be placed at a minimum distance from the evaporator of 1700 mm.

- **Ducting of evaporator air outlet**

Ventilation ducts must never be covered.

NOTE :

For stationnary utilization, we recommend to place the body in the shade.

IMPORTANT

Never leave your unit more than a month without running.

5.   RECOMMENDED TRANSPORT TEMPERATURES

Below are some general recommendations on product transport temperatures and operating modes for the unit. These are included for reference only and should not be considered pre-emptive of the setpoint required by the shipper or receiver.

More detailed information can be obtained from your Carrier Transicold dealer.

Product	Set-point Range		Operating mode*
Bananas	15°C	60°F	Continuous
Fresh fruits and vegetables	+4°C to +6°C	+39°F to +43°F	Continuous
Fresh meats and seefood	+2°C	+36°F	Auto-Start/Stop or continuous
Dairy Products	+2°C to +6°C	+36°F to +43°F	Auto-Start/Stop or continuous
Ice	-20°C	15°F to 20°F	Auto-Start/Stop
Frozen fruits and vegetables	-18°C	0°F	Auto-Start/Stop
Frozen meats and seafood	-20°C	-10°F to 0°F	Auto-Start/Stop
Ice cream	-25°C	-20°F	Auto-Start/Stop

* During delivery cycles that include frequent stops and door openings, it is recommended that the unit always be operated in the continuous run mode to help insure product quality. It is essential to shut down the unit during the periods when the body doors are open, in order to maintain the temperature of the cargo and keep the unit operating correctly.

6.   QUICK GLANCE ON THE DISPLAY BOARD

6.1.   Microprocessor LOGICOLD

Keep the fold out sheet while reading the instructions.

The microprocessor "LOGICOLD" control incorporated into Vector 1800 and 1800 Mt˚ are the most reliable control system available.

LOGICOLD is also designed to be the easiest to use, offering great flexibility in control and selecting the language you need.

LOGICOLD allows yet minimal user input for normal operation : a true "set it and forget it" design.

1. Compartments ON/OFF switch for Vector 1800 Mt˚ only	**8. Alarm key**
2. Mode lights	**9. Start/stop-continuous key**
3. Display	**10. Select key**
4. Up and down arrow keys	**11. Run/Stop switch**
5. Equal key	**12. Standby/Engine switch**
6. Message center	**13. Language switch**
7. Manual defrost key	

6.2.   Optional control panel

Keep the fold out sheet while reading the instructions.

User‑friendly indicator and operator control panels clearly show individual compartment temperatures with easy‑to‑read displays.

These compact panels can be mounted to suit the individual operator's preferences.

(Example : on the front bulkhead, in the cab or in the refrigerated compartment – including mounting in the truck wall itself)

14. Compartment on/OFF key	**19. Up and down arrow keys**
15. Control panel power on	**20. Heating operating mode light of a compartment**
16. Unit ON/OFF key	
17. Manual defrost key	**21. Cooling operating mode light of a compartment**
18. Control panel locking	**22. Temperature indicated in ˚C <u>or</u> ˚F**

From this optional control panel, you can : switch on the unit, check compartment 1, 2 or 3 temperatures, change setpoints, energize a manual defrost.

7.   PRETRIP INSPECTION

The pre‑trip inspection should be performed before picking up any load. This inspection is essential to anticipate and help minimize the possibility of "on-the-road" problems. These checks take only a few minutes.

1. Place the unit's main power switch to the Stop position.

2. **Fuel** – Drain any water and impurities from the sump of the refrigeration unit fuel tank by opening the drain-cock located on the bottom of the tank. Close the valve when only pure fuel emerges. Check the fuel level in the tank, ensuring that the fuel supply is adequate for unit operation. Refuel if necessary.

3. **Battery** – On units equipped with serviceable batteries, the level of the electrolyte in each of the cells should be checked. If the level is low, distilled water should be added to the correct level. Most units, however, are equipped with low or maintenance-free batteries; these should be inspected to ensure that the connections are clean and tight, and the battery hold‑down should be checked for tightness.

4. **Coolant level** - Visually inspect the coolant level in the coolant bottle (located on the upper left-hand side of the unit).

5. **Engine Oil** – The engine oil should be checked last, since oil has to drain out of the block and into the oil pan to obtain a correct reading. Remove the dip-stick, wipe it clean and re–insert it fully into the engine block. Once again, remove the dip-stick and observe the oil level; it should be somewhere between the "full" and "add" marks. If it is below the add mark, add oil until the level is correct.

6. **Over‑all Unit inspection** - Visually inspect the entire unit for leaks, loose bolts, frayed, loose, or broken wires, etc. The radiator and condenser coils of the unit should be free of dirt, bugs, cardboard, or any other debris that may obstruct airflow across the coils. The evaporator (located inside the body) should be free of debris also, especially stretch–wrap, which is often used during transport to prevent cargo from shifting.

7. **Truck body** - The body should be inspected prior to loading. Check the door and vent seals for damage and wear. Inspect the entire interior and exterior of the body to detect any damage, including the inner and outer skins of the body. Damage to the insulation may compromise the unit's ability to maintain the product temperature by increasing the amount of heat gain in the box.

8. **Pretrip** - Initiate a pretrip by pressing the PRETRIP Key.

62‑60558‑03

8. OPERATION

Keep the fold out sheet while reading the instructions.

VECTOR 1800 : The box temperature is displayed in °C.

VECTOR 1800 Mt° : The box temperature displayed is C1 (comp.1), C2 (comp.2) or C3 (comp.3) 10 seconds alternative.

> **WARNING - VECTOR 1800 MT°**
>
> IF NO COMPARTMENT IS SELECTED, THE UNIT WILL NOT START !

8.1. Starting the unit - ROAD operation

1. To power up the unit, place the ENGINE / STANDBY switch (12.) to ENGINE.

2. *Place the desired compartment switch (1.) to ON (for VECTOR 1800 Mt °).*

3. Place the RUN / STOP switch (11.) on the microprocessor controller to RUN.

4. Toggle the LANGUAGE switch (13.) as soon as you select 1 of the 9 available languages : English – French – Spanish – German – Danish - Dutch - Italian – Russian and Polish.

8.2. Starting the unit - STANDBY operation

> **1. Check that the unit is connected to a suitable electricity supply (See section 8.2.1.)**

2. To power up the unit, place the ENGINE / STANDBY switch (12.) to STANDBY.

3. *Place the desired compartment switch (1.) to ON (for VECTOR 1800 Mt °).*

4. Place the RUN / STOP switch (11.) on the microprocessor controller to RUN.

5. Toggle the LANGUAGE switch (13.) as soon as you select 1 of the 9 available languages : English – French – Spanish – German – Danish - Dutch - Italian – Russian and Polish.

NOTE : The unit is fitted with an automatic phase reverser. In all cases, the electric motor will run in the correct direction.

8.2.1. Standby operation guidelines

For safe, reliable operation in Standby mode, it is important to consider the following guidelines :

a. **NEVER** plug the unit in to the power source with the main switch in the RUN position. The main switch should always be in the STOP position when connecting the unit to the power source.

b. The extension cable and fuse used for network connection must comply with the legislation currently applicable on the site of use (minimum H07 RNF CEI 245-4) and with the unit specifications as described in the table below :

Unit	Fuse aM 400 / 3 / 50 Hz aM : Motor rated fuse	Standardized extension cable H.07.RNF 400 volts
Vector 1800 & 1800Mt°	32 A	6 mm^2

c. The unit connection cable must be fitted with a ground connection. The cable must be connected to earth.

d. On the 400 V supply, the unit **MUST BE CONNECTED** to a high sensibility (30mA) differential protection.

e. When performing service and/or maintenance procedures on a refrigeration unit, make certain that the unit is disconnected from the power source and that the keypad correctly indicates "OFF", and that it is impossible for the unit to start up automatically during the maintenance operation.

f. Operations on the 400 V supply for the unit must only be carried out by authorized personnel.

g. The user is liable for ensuring that the above measures are taken.

8.3. Unit shut-down

1. To stop the unit, place the RUN / STOP switch (11.) on the microprocessor controller keypad to STOP.

> ⚠️ **NOTE - VECTOR 1800 MT°**
>
> IF ALL COMPARTMENTS ARE STOPPED, THE UNIT WILL STOP BUT
> THE MICROPROCESSOR WILL STAY ENERGIZED.

8.4. Manual defrost

1. Press the MANUAL DEFROST key (7.). The DEFROST Light will come on and the message center will display "**DEFROST CYCLE STARTED**" for 5 seconds or flash "**CANNOT START DEFROST CYCLE**" for 5 seconds.

> ⚠️ **NOTE - VECTOR 1800 MT°**
>
> ALL COMPARTMENTS WILL DEFROST AT THE SAME TIME.

The defrost mode may be initiated in three different ways if the evaporator coil is below 4.5°C (40°F) :

1. Defrost is initiated automatically at preset intervals by defrost timer in the microprocessor.

2. Defrost is initiated by the defrost air switch.

3. The defrost mode may be manually intiated by pressing the Manual Defrost Key.

If **"CANNOT START DEFROST CYCLE"** is displayed, the coil temperature is above 4.5°C (40°F). Run the unit to lower temperature below 4.5°C (40°F) and then restart defrost.

All defrost modes with heater bars terminate when the evaporator temperature is higher than 12.5°C (55°F).

Natural defrost mode terminates when Return Air Temperature is equal to Supply Air Temperature.

*For VECTOR 1800 Mt °: the defrost mode terminates when the evaporator temperature **of EACH COMPART-MENT** is higher than 12.5 °C (55 °F).*

Should the defrost cycle not complete within 45 minutes, the defrost cycle is terminated. **"A54-DEFROST NOT COMPLETE"** will be in the Message Center.

After the 45 minute termination, the controller will wait 1.5 hours before attempting another defrost cycle. Pressing the manual defrost key will override this mode and start a new 45 minute defrost cycle. Overriding this 1.5 hour waiting period will generate an alarm.

If a shutdown alarm occurs, defrost will be terminated.

8.5. To change setpoint temperature

1. Wait the display of the compartment for which you want to modify the setpoint (for VECTOR 1800 Mt °)

2. With the setpoint displayed, press the UP ARROW or DOWN ARROW key (4.) to change setpoint to the desired value.The display will flash to indicate that the setpoint reading being displayed is a non-entered value. The message center will show "↑↓**TO SCROLL, THEN = TO SAVE**" . The setpoint display will flash for 5 seconds of until the = (ENTER) key is pressed.

3. Press the = (ENTER) key (5.) to save the new setpoint.

4. Verify that the message "**SETPOINT CHANGED**" is displayed on the message center for 5 seconds.

Remarks :

-Setpoints of -30°C to +32°C (-22°F to +89°F) may be entered via the keypad. The controller always retains the last entered setpoint in memory.

-You can not change setpoint when unit is in Pretrip or when viewing Alarm List, Data List or Functional Parameters.

-Depressing the = key (ENTER) will cause the new displayed setpoint value to become active. If the display is flashing and the new value is not entered, after 5 seconds or no keyboard activity, the display will flash for 10 seconds with **"SETPOINT NOT CHANGED"** displayed and then revert back to the last setpoint. All other keys are active at this time and may be pushed while the display is flashing.

TIP

YOU MAY PRESS AND HOLD THE UP ARROW OR DOWN ARROW KEY TO CHANGE THE SET-POINT. THE LONGER THE KEY IS HELD, THE FASTER THE SETTING WILL CHANGE.

8.6. Start-Stop operation

1. Press the START/STOP CONTINUOUS key (9.) until the START/STOP Light (2.) on the controller illuminates.

2. Verify that "**START/STOP MODE SELECTED**" is displayed on the message center for 5 seconds and that the START/STOP Light is illuminated. The unit is now in Start-Stop operation.

8.6.1. Start/Stop system - Road operation

The system works as follows :

● Engine preheat and start-up is automatic.

● When the temperature(s) selected with the thermostat(s) has been reached, the system shuts the diesel engine down.

● Engine shut-downs can be programmed. Shut-down times will be modified depending on the isothermal insulation of the box, the ambient temperature and the cargo. The shut-down time is pre-programmed in the plant.

The user should determine whether this setting is appropriate for his type of cargo and the insulation of the bodywork **(all adjustments are to be made by a Carrier Transicold technician)**.

<u>Caution</u> : During unit shut-downs, the evaporator fans also stop. Only use this operating mode for products which tolerate shut-downs of this kind.

- The start/stop system comprises several safety devices which ensure it operates correctly. These check:

    -the battery status

    -the temperature of the engine water

    -the minimum run time

Automatic start/stop is provided to permit starting/restarting of the compressor as required. This gives the microprocessor automatic control of starting and stopping the diesel engine. The main function of automatic start-stop is to turn off the refrigeration system near the setpoint to provide a fuel efficient temperature control system and then restart the engine when needed. Start-stop operation is normally used for frozen loads only.

If pressing the START/STOP CONTINUOUS key seems to have no effect, this key may be locked out. START--STOP and CONTINUOUS operation may be tied to the setpoint ranges for frozen and perishable loads.

If the unit fails to start, shuts down on a safety, or fails to run for the minimum run time, three consecutive times, the "Auto-Start/Failure" is activated.

The microprocessor controller monitors box temperatures, battery voltage, and engine coolant temperature. Once setpoints are reached the controller will shut off the diesel engine to conserve fuel. The controller will not shut off the engine if the battery voltage is not sufficient to restart it.

The controller will restart the engine if the box temperature is

    -more than $+6°C$ $(+11°F)$ (programmable) over setpoint,

    -the battery voltage drops below 12.2 VDC, or if

    -the engine coolant temperature drops below $+0°C$.

8.6.2. Start/Stop system - Standby operation

- Start/Stop :

    -The unit will start for a minimum of 5 minutes.

    -The unit will stop for a minimum of 5 minutes.

- Continuous Run :

    -Only for setpoint above $-12°C$ $(\geq 12°C)$

8.7. Continuous run operation

1. Press the START/STOP CONTINUOUS key ((9.) until the CONTINUOUS RUN Light (2.) on the controller illuminates.

2. Verify that "**CONTINUOUS RUN MODE SELECTED**" is displayed on the message center and that the CONTINUOUS RUN Light is illuminated. The unit is now in Continuous Run operation.

Remarks :

    -In the continuous run mode, the diesel engine will not shut down except for safeties or if the engine stalls. Continuous Run operation is normally used for perishable loads.

    -If pressing the START/STOP CONTINUOUS key seems to have no affect, this key may be locked out. Start--Stop and Continuous operation may be tied to the setpoint ranges for frozen and perishable loads.

8.8. Pretrip

1. Press the SELECT key (10.) until "**PRESS = TO START PRETRIP**" is displayed.

2. Press the = key (5.) to start PRETRIP.

3. Verify that the display shows **TEST#**.

Remarks :

-The PRETRIP mode is for checking unit operation and evaluating operation of all modes and indicating a failure when detected.

-The message center displays the current test and the % complete of the test. When the Pretrip tests are complete the message center will display **"PRETRIP PASS"** or **"PRETRIP FAIL IN TEST<test number>"**. If **"PRETRIP FAIL IN TEST<test number>"** is displayed the ALARM light will flash. Press the ALARM LIST key to review the alarms set by the Pretrip tests.

-Once pretrip is started, the control panel keys are disabled until the pretrip ends.

8.9. Trip start

1. To mark the start of a trip in the data recorder, press the SELECT key (10.) until "**PRESS = TO MARK TRIP START**" is lit.

2. Press the = key (5.).

3. If trip start is acknowledged by the data recorder, "**TRIP START ENTERED**" will be displayed for 5 seconds and then the display will revert back to the normal display. Otherwise "**CANNOT ENTER TRIP START**" will flash and then the display will revert back to the normal display.

Remarks :

-Trip start marks a time stamp in memory to allow easy review of the data from the last trip.

-Trip start tells the recorder that the present date and time is beginning of a new trip.

8.10. To display unit data

1. Press the SELECT key (10.) until "**PRESS ↑↓ TO VIEW DATA**" is displayed.

2. Press the = key (5.).

3. Press the UP ARROW or DOWN ARROW key (4.) to display the next or previous unit data value.

UNIT DATA	
Message	Value
TOTAL ENGINE HOURS:	0 HR to 99999 HRS
TOTAL STANDBY HOURS	0 HR to 99999 HRS
TOTAL SWITCH ON HOURS:	0 HR to 99999 HRS
OTHER HOUR METERS & COUNTERS	0 HR to 99999 HRS
ENGINE PROTECT HOURS	
SWITCH ON PROTECT HOURS:	
ENGINE SLEEP HOURS:	
SWITCH ON SLEEP HOURS:	
HIGH SPEED HOURS:	
START CYCLES:	

UNIT DATA	
Message	Value
HOURS TO ENGINE MAINT:*	0 HR to 99999 HRS
HOURS TO S/B MTR MAINT:*	0 HR to 99999 HRS
HOURS TO UNIT MAINT:*	0 HR to 99999 HRS
TIME LEFT TO PM 1:* to TIME LEFT TO PM 5:*	0 HR to 99999 HRS
DATALOGGER:	Date / Time
RANGE 2 LOCK:*	OFF/CONTINOUS/START-STOP
RANGE 2 MINIMUM TEMP:*	-30˚C to +32˚C **or** -22˚F to +90˚F
RANGE 2 MAXIMUM TEMP:*	-30˚C to +32˚C **or** -22˚F to +90˚F
RANGE 1 LOCK:*	OFF/CONTINOUS/START-STOP
RANGE 1 MINIMUM TEMP:*	-30˚C to +32˚C **or** -22˚F to +90˚F
RANGE 1 MAXIMUM TEMP:*	-30˚C to +32˚C **or** -22˚F to +90˚F
UNIT MODEL #:	XXXXXX
UNIT SERIAL #:	XXXXXX
TRAILER ID #:	XXXXXX
CONTROL SERIAL #:	XXXXXX
DISPLAY SOFTWARE REV:	XXXXXX
SOFTWARE REVISION:	XXXXXX
INSTALLED OPTIONS	IntelliSet, High Ambient ...
START MODE:	AUTO or MANUAL
EXPANSION VALVE:	0 % to 100 % or closing
SUCTION MOD VALVE:	0 % to 100 % or closing
UNIT AC CURRENT #1:	0 A to 60 A
UNIT AC CURRENT #2:	0 A to 60 A
ENGINE RPM:	0 to 3 000
CURRENT DRAW:	-80 A to 80 A
BATTERY:	0 V to 28 V
COMP DISCHARGE TEMP:	-40˚C to +200˚C **or** -40˚F to 392˚F
EVAP OUTLET TEMP:	-47˚C to +70˚C **or** -52.6˚F to 158˚F
SUCTION LINE TEMP:	-47˚C to +70˚C **or** -52.6˚F to 158˚F
DEFROST TERM TEMP 1:	-47˚C to +70˚C **or** -52.6˚F to 158˚F
C2 DEFROST TERM TEMP: *V1800 Mt ° only*	-47˚C to +70˚C **or** -52.6˚F to 158˚F
C3 DEFROST TERM TEMP: *V1800 Mt ° only*	-47˚C to +70˚C **or** -52.6˚F to 158˚F
AMBIENT AIR TEMP:	-47˚C to +70˚C **or** -52.6˚F to 158˚F
DELTA-T:	RAT - SAT (˚C / ˚F)
SUPPLY AIR TEMP:	-47˚C to +70˚C **or** -52.6˚F to 158˚F
C2 SUPPLY AIR TEMP:	-47˚C to +70˚C **or** -52.6˚F to 158˚F
RETURN AIR TEMP:	-47˚C to +70˚C **or** -52.6˚F to 158˚F
C2 RETURN AIR TEMP: *V1800 Mt ° only*	-47˚C to +70˚C **or** -52.6˚F to 158˚F
C3 RETURN AIR TEMP: *V1800 Mt ° only*	-47˚C to +70˚C **or** -52.6˚F to 158˚F
ENGINE COOLANT TEMP:	-50˚C to +130˚C **or** -58˚F to 266˚F
EVAPORATOR PRESSURE:	-1 B to +6.88 Bars **or** -14.7 psi to 100 psi
DISCHARGE PRESSURE:	0 B to +34.4 Bars **or** 0 psi to 500 psi

UNIT DATA	
Message	Value
SUCTION PRESSURE:	−1 B to +6.88 Bars **or** −14.7 psi to 100 psi
* These may or may not be displayed depending on the Functional Change (Parameters) settings.	

8.11.   To change a function

1. Press the SELECT key (10.) until "**PRESS ↑↓ TO VIEW SETTINGS**" appears in the Message Center.

2. Press the UP ARROW key (4.) to scroll through the Function List beginning at the top.

   Press the DOWN ARROW key (4.) to scroll through the Function List beginning at the bottom.

3. "**↑↓ TO SCROLL, THEN = TO SELECT**" will appear in the Message Center.

4. To read through the Function List , continue to press either the UP or DOWN ARROW key (4.). The Functional Parameters will appear in the Message Center in the order as shown below. The list is circular meaning that once the end is reached, it is repeated from the beginning. If no key presses are made for 10 seconds, the Message Center will return to the default message.

5. To change one of the Functions, bring the Function you wish to change into the Message Center, and press = (ENTER) key (5.). "**↑↓TO SCROLL, THEN = TO SAVE**" will show in the Message Center. Pressing either UP or DOWN ARROW key (4.) will begin to change the Function setting. The Message Center will flash, indicating that a change has been made that has not been entered into memory.

6. Continue pressing UP or DOWN ARROW key (4.) until the desired value is showing, then press the = (ENTER) key (5.). The Message Center will stop flashing. The new value is now in memory.

If the = key is not pressed within 10 seconds, the Message Center will change to "**FUNCTION NOT CHANGED**". This will appear for 5 seconds, then return to the last Functional Parameter shown. If no further keys are pressed, the default display will return in another 10 seconds.

FUNCTIONAL PARAMETER	SELECTIONS
DEFROST TIMER SET FOR	1.5 hrs / **3 hrs** / 6 hrs / 12 hrs
SET S/S PARAMETERS: (These may be displayed individually (8 parameters) as PERISH and FROZEN, or combined (4 parameters) with no designation.)	
PERISH MIN RUN TIME: FROZEN MIN RUN TIME:	**4 mins** to 60 mins (in 1 minute increments)
PERISH MIN OFF TIME: FROZEN MIN OFF TIME:	10 mins to 90mins **20 mins**default (in 1 minute increments)
PERISH OVERRIDE TEMP: FROZEN OVERRIDE TEMP:	2°C (38.5°F) to 10°C (50°F) **4°C (40°F)** default (in 0.5°C increments)
PERISH MAX OFF TIME: FROZEN MAX OFF TIME:	**OFF** / 10 mins to 255mins (in 1 minute increments)
FROZEN SHUTDOWN OFFSET:	**0°C (32°F)** to 2°C (38.5°F)
TEMP CONTROL:	**RETURN AIR** / SUPPLY AIR
DISPLAY IN	ENGLISH UNITS / **METRIC UNITS**

FUNCTIONAL PARAMETER	SELECTIONS
* SET PM HOURMETERS:	
• ENGINE • SWITCH ON • PM 1 thru PM 55	**ON** / **OFF** / RESUME / RESET –
• STANDBY • SWITCH ON • PM 1 thru PM 55	**ON** / **OFF** / RESUME / RESET –
OUT OF RANGE ALARM:	OFF / 2°C (4°F) / 3°C (5.5°F) / **4°C (7°F)**
C2 OUT OF RANGE ALARM:	OFF / 2°C (4°F) / 3°C (5.5°F) / **4°C (7°F)**
C3 OUT OF RANGE ALARM:	OFF / 2°C (4°F) / 3°C (5.5°F) / **4°C (7°F)**
SLEEP MODE:	**NO** / YES
* OVERRIDE DOOR SHUTDOWN:	**NO** / YES
* OVERRIDE REMS1 SHUTDOWN: * OVERRIDE REMS2 SHUTDOWN:	**NO** / YES
SILENT MODE	**NO** / YES
ECO MODE: YES or ECO MODE: NO	**NO** / YES
NO POWER-SWITCH TO DIESEL:	**NO** / YES
Selections in **BOLD** are the factory settings.	
* This Functional Parameter may not appear in the list for your unit, depending on how the microprocessor has been configured.	

1. Start the unit as mentioned before.

2. Press the SYSTEM ON/OFF key. Power light will go ON.

3. Press the ON/OFF key to energize selected compartment.

4. DISPLAY

Display	Description
`--`	waiting for communication with unit
-`20`	compartment temperature display
-`20`	setpoint temperature display
	evaporator status (heat or cool or null)
`OF`	compartment shut-down via remote control
`dF` -`20`	defrost compartment
`--` -`20`	temperature sensor malfunction

8.12.1. Change the setpoint

Setpoint change can be made from control panel or cab control.

1. Press the UP or DOWN ARROW key (19.) to increase or decrease setpoint. This is the same operation for each compartment.

8.12.2. To set pre-set setpoint

The control panel allows the user to pre-set 5 differents temperatures on each compartment.

1. Switch main RUN/STOP switch and required remote compartment switches on the unit to RUN.

2. Press Carrier logo and the lock light will be displayed.

3. Press host compartment UP ARROW key for 10 seconds. P1 will be displayed in all compartments.

4. Set lowest setpoint temperature required.

5. Press Carrier logo and P2 will be displayed.Set next lowest temperature required up to five pre-set setpoints are available.

6. Pressing the second compartment up or down arrow will allow the lowest temperature required to be preset in the second compartment. Pressing Carrier logo will then move on to the nest lowest (up to five).

7. Press the Carrier logo for 10 seconds and this will remove the lock light and store the pre-set setpoints in memory.

8.12.3. To remove pre-set setpoint

1. Switch main RUN/STOP switch and required remote compartment switches on the unit to RUN.

2. Press Carrier logo and the lock light will be displayed.

3. Press host compartment up arrow for 10 seconds. P1 will be displayed in all compartments.

4. Set temperature to lowest possible and OFF will be displayed.

5. Press the UP ARROW key on remote compartments will display the presets, take the temperature to the lowest possible and OFF will be displayed.

6. Press the Carrier logo for 10 seconds and the new information will be stored in memory.

8.12.4. To lock and unlock the control panel

1. Press the CARRIER logo 10 seconds to lock the control panel.

2. then, starts to flash in the new logic.

3. Press again the CARRIER logo 10 seconds to unlock.

4. The indicator goes off.

NOTE
It is not necessary for the compartment to be running in order to modify or see the setpoint value and the temperature of the compartment.
The unit can be shut down both with the control panel and the general switch.

9.   PROBLEMS

Everything possible has been done to ensure that your unit is the most reliable, trouble–free equipment available on the market today. If, however, you run into problems, the following section may be of assistance.

If you do not find the trouble that you have experienced listed below, please call your Carrier Transicold dealer for assistance.

9.1.   Fuses location

Refer to the electrical schematic provided with the unit.

9.2.   Fault alarm display and safety features

9.2.1.   Alarm and default messages

Unit problems detected by the controller are stored in the Alarm List in the controller. Stored alarms may be viewed in the Message Center.
All most times, the **"STATUS OK"** message will be shown in the message center.

Examples of default messages :

-When the unit is due for service or preventative maintenance (PM). **"PM DUE"** will be shown until the unit is taken in for the PM inspection and the PM timer is reset.

-If there is a problem with the data recorder, **"DATA RECORDER FAILURE"** will be shown.

-If there is a problem within the Microprocessor, the alarm **"249-MICROPROCESSOR ERROR"** will be shown.

If a problem begins to develop one of the following messages may be shown :

"CHECK ENGINE OIL LEVEL" means that the engine oil level needs to be checked and oil added.

"CHECK AT NEXT SERVICE INTERVAL" is shown when :

-There is an active non-shutdown alarm present (the alarm condition is present but is not serious enough to stop the unit). These alarms may be viewed by pressing the ALARM LIST Key. The message will clear itself when the condition is corrected.

-If there has been a Shutdown Alarm, and the unit has not yet been into a shop for inspection. Once the shutdown condition has been corrected, the unit may be started, and the alarm message will no longer be in the Alarm List. This message can only be cleared by a qualified refrigeration technician.

1. Press the ALARM LIST key (8.). If there are no active alarms in the alarm list, the display will say "**NO ACTIVE ALARMS**" for 5 seconds.

2. If there are active alarms in the alarm list, the display will be "A" and the alarm message for the latest active alarm in the list for 5 seconds.

3. Press the UP ARROW or DOWN ARROW key (4.).

4. When you reach the end of the alarm list, "**LIST END, = TO CLEAR ALARMS**" is displayed.

5. If the alarm list is full, the "A" and the alarm message for the latest alarm is displayed for 5 seconds and then "**LIST END, = TO CLEAR ALARMS**" is displayed for 5 seconds.

6. To deactivate the active alarm list, press the = key (5.) while "**LIST END, = TO CLEAR ALARMS**" is being displayed.

TIP
TO DEACTIVATE ACTIVE ALARMS, TURN THE CONTROLLER OFF AND THEN BACK ON USING THE **RUN** / **STOP** SWITCH.

If there is a safety shutdown, **"UNIT SHUTDOWN-SEE ALARM LIST"** will be shown. Pressing the ALARM LIST key (8.) will bring any Active Alarms into the Message Center. The following are the Shutdown Alarms that may appear :

Unit status	✓ : Alarm only / X or ✓ : It depends on the configuration / X : Shutdown

Driver alarms	Status	Driver alarms	Status
1-LOW FUEL LEVEL WARNING (option)	✓	3-LOW COOLANT LEVEL (option)	✓
2-LOW ENGINE OIL LEVEL (option)	X or ✓	4-LOW REFRIGERANT LEVEL (option)	✓

Shutdown alarms	Status	Shutdown alarms	Status
11-LOW ENGINE OIL PRESSURE	X or ✓	18-LOW REFRIGERANT PRESSURE	X or ✓
12-HIGH COOLANT TEMPERATURE	X or ✓	19-LOW FUEL SHUTDOWN	X or ✓
13-HIGH DISCHARGE PRESSURE	X	22-LOW SUCTION SUPERHEAT	X
14-ELECTRIC CIRCUIT	X	23-A/C CURRENT OVER LIMIT	X
15-BATTERY VOLTAGE TOO HIGH	X	27-HIGH SUCTION PRESSURE	X or ✓
16-BATTERY VOLTAGE TOO LOW	X	28-CHECK REFRIGERATION SYSTEM	X or ✓
17-HIGH COMP DISCHARGE TEMP			

Start up engine alarms	Status	Start up engine alarms	Status
30-FAILED TO RUN MINIMUM TIME	X	37-CHECK LOW SPEED RPM	✓
31-FAILED TO START-AUTO MODE	X	38-CHECK HIGH SPEED RPM	✓
32-FAILED TO START-MANUAL	X	39-CHECK ENGINE RPM	X or ✓
34-ENGINE FAILED TO STOP	✓	40-CHECK GLOW PLUGS	✓

Start up engine alarms	Status	Start up engine alarms	Status
35-CHECK STARTER CIRCUIT	**X** or ✓	41-ENGINE STALLED	X
36-CHECK COOLANT TEMPERATURE	✓		

Warning / status alarms	Status	Warning / status alarms	Status
51-ALTERNATOR NOT CHARGING	**X** or ✓	58-CHECK REMOTE SWITCH 2 - Vector 1800	✓
53-BOX TEMP OUT-OF-RANGE	✓	59-DATALOGGER NOT RECORDING	✓
54-DEFROST NOT COMPLETE	✓	60-DATALOGGER TIME WRONG	✓
55-CHECK DEFROST AIR SWITCH	✓	61-DOOR OPEN	✓
56-CHECK EVAPORATOR AIRFLOW	✓	62-C2 BOX TEMP OUT-OF-RANGE - V1800 Mt°	**X** or ✓
57-CHECK REMOTE SWITCH 1 - Vector 1800	✓	63-C3 BOX TEMP OUT-OF-RANGE - V1800 Mt°	**X** or ✓

Electrical alarms	Status	Electrical alarms	uStatus
71-BAD F2 OR F3 FUSE	✓	92-CHECK HEATER CONTACTOR 2	✓
72-BAD F4 OR F6 FUSE	✓	93-CHECK STARTUP BUZZER	✓
73-NO POWER- CHECK POWER CORD	**X**	94-CHECK COMP CONTACTOR 1	✓
74-AC PHASE REVERSED	**X** or ✓	95-CHECK COND FAN CONTACTOR 1	✓
75-COMP MOTOR OVERHEATED	**X**	96-CHECK GENERATOR CONTACTOR	✓
76-CONDENSER MOTOR OVERHEATED	**X**	97-CHECK SV2 CIRCUIT	✓
77-EVAP MOTOR OVERHEATED	**X**	98-CHECK HIGH TEMP THERMOSTAT	**X both electric heaters**
78-CHECK SV1 CIRCUIT	✓	99-CHECK STANDBY CONTACTOR	✓
79-CHECK SV4 CIRCUIT	✓	100-OVERLOAD / GROUND FAULT	✓
80-CHECK SV3 CIRCUIT	✓	101-C2 EVAP MOTOR OVERHEATED - V1800 Mt°	✓
81-CHECK FHR CIRCUIT	✓	102-C3 EVAP MOTOR OVERHEATED - V1800 Mt°	✓
82-CHK REMOTE OUT-RANGE LIGHT - V1800	✓	103-C2 CHK HEATER CONTACTOR 1 - V1800 Mt°	✓
83-CHECK REMOTE DEFROST LIGHT	✓	104-C2 CHK HEATER CONTACTOR 2 - V1800 Mt°	✓
84-CHECK REMOTE ALARM LIGHT	✓	105-C3 CHK HEATER CONTACTOR 1- V1800 Mt°	✓
85-CHECK UL1 CIRCUIT	✓	106-C3 CHK HEATER CONTACTOR 2- V1800 Mt°	✓
86-CHECK UL2 CIRCUIT	✓	107-C2 CHECK LSV - Vector 1800 Mt°	✓
87-CHECK REMOTE HEAT LIGHT - V1800	✓	108-C3 CHECK LSV - Vector 1800 Mt°	✓
88-CHECK REMOTE COOL LIGHT - V1800	✓	109-CHECK EVAP FAN CONTACTOR	✓
89-CHECK REMOTE AUTO LIGHT	✓	110-C2 CHK EVAP FAN CONTACTOR - V1800 Mt°	✓
90-CHK AFA SOLENOID CIRCUIT	✓	111-C3 CHK EVAP FAN CONTACTOR - V1800 Mt°	✓
91-CHECK HEATER CONTACTOR 1			

Sensor alarms	Status	Sensor alarms	Status
121-CHECK AMBIENT AIR SENSOR	✓	121-CHECK AMBIENT AIR SENSOR	✓
122-CHECK RETURN AIR SENSOR	**X**	122-CHECK RETURN AIR SENSOR	**X**
123-CHECK SUPPLY AIR SENSOR	**X**	132-CHK DEFROST TERM 2 SENSOR	✓
124-CHK DEFROST TERM 1 SENSOR	✓	133-CHEK REMOTE TEMP SENSOR 1	✓
125-CHECK COMP DISCH SENSOR	✓	134-CHEK REMOTE TEMP SENSOR 2	✓

Sensor alarms	Status	Sensor alarms	Status
126-CHECK FUEL SENSOR CIRCUIT	✓	135-CHEK REMOTE TEMP SENSOR 3	✓
127-CHECK SUCTION TEMP SENSOR	✓	136-C2 CHK SUPPLY AIR SENSOR	✓
128-AMPS MEASURE	✓	137-C2 CHK RETURN AIR SENSOR	✓
129-CHECK ENG COOLANT SENSOR	✓	138-C3 CHK RETURN AIR SENSOR	✓
130-CHECK ENGINE RPM SENSOR	✓	139-C2 CHECK DEFROST SENSOR	✓
131-CHECK EVAP TEMP SENSOR	✓	140-C3 CHECK DEFROST SENSOR	✓

Pretrip alarms	Status	Pretrip alarms	Status
141-PRETRIP STOPPED BY USER	✓	167-C3 CHECK HEATER 2 CIRCUIT	✓
143-CHECK CLUTCH CIRCUIT	✓	168-C2 CHECK LSV VALVE	✓
144-CHECK UL1 CIRCUIT	✓	171-CHECK EVAP & DISC PRESS	✓
145-CHECK SPEED SOL CIRC	✓	172-CHECK EVAP & ECONO PRESS	✓
146-C2 CHECK HEATER 1 CIRCUIT	✓	173-CHECK DISC & ECONO PRESS	✓
147-C2 CHECK HEATER 2 CIRCUIT	✓	174-CHECK LOW SPEED RPM	✓
148-CHECK SV1 CIRCUIT	✓	175-CHECK HIGH SPEED RPM	✓
149-CHECK SV3 CIRCUIT	✓	176-C3 CHECK LSV VALVE	✓
150-CHECK SV4 CIRCUIT	✓	177-CHECK TXV SUPERHEAT	✓
151-CHECK GLOW PLUG CIRCUIT	✓	178-CHECK UL1	✓
152-CHECK FUEL SOLENOID CIRC	✓	180-CHECK SUCTION MOD VALVE	✓
153-CHECK RETURN AIR SENSOR	✓	181-CHECK SV4 VALVE	✓
154-CHECK SUPPLY AIR SENSOR	✓	182-CHECK SV1 VALVE	✓
155-CHK COOLANT TEMP SENSOR	✓	183-CHECK SV3 VALVE	✓
156-CHECK BATTERY VOLTS	✓	184-C2 CHECK EVAP FAN MOTOR	✓
157-CHECK BATTERY CURRENT	✓	185-C3 CHECK EVAP FAN MOTOR	✓
158-CHECK AMBIENT AIR SENSOR	✓	186-CHECK EVAP OUTLET TEMP	✓
159-CHK DEFROST TERM 1 SENSOR	✓	187-CHECK HEATER 1 CIRCUIT	✓
160-CHECK DISCH TEMP SENSOR	✓	188-CHECK HEATER 2 CIRCUIT	✓
161-CHK SUCTION TEMP SENSOR	✓	189-CHECK EVAP FAN MOTOR	✓
162-CHK AFA SOLENOID CIRCUIT	✓	190-CHECK CONDENSER FAN MOTOR	✓
163-C3 CHECK HEATER 1 CIRCUIT	✓	191-CHECK UL2	✓
164-CHECK UL2 CIRCUIT	✓	192-CHECK SV2 CIRCUIT	✓
165-CANNOT PUMP DOWN	✓	194-HIGH SUCTION PRESSURE	✓
195-LOW SUCTION PRESSURE	✓	204-LOW SUCTION PRESSURE	✓
196-HIGH DISCHARGE PRESSURE	✓	205-CHK DEFROST TERM 2 SENSOR	✓
197-CHECK CLUTCH	✓	206-CHK CONDENSER FAN CIRCUIT	✓
198-LOW DISCHARGE PRESSURE	✓	207-CHK COMP CONTACT CIRCUIT	✓
199-C2 CHK RETURN AIR SENSOR	✓	208-CHK GENERATOR CONT CIRC	✓
200-CHECK UL1 CYLINDERS	✓	209-CHK STANDBY CONT CIRCUIT	✓
201-CHECK UL2 CYLINDERS	✓	210-C3 CHK RETURN AIR SENSOR	✓

Pretrip alarms	Status	Pretrip alarms	Status
202-HIGH SIDE LEAK	✓	211-C2 CHECK DEFROST SENSOR	✓
203-CHK DISCHARGE CHECK VALVE	✓	212-C3 CHECK DEFROST SENSOR	✓

Maintenance alarms	Status	Maintenance alarms	Status
223-ENGINE MAINTENANCE DUE	✓	227-SERVICE SOON-PM #2 DUE	✓
224-STANDBY MAINTENANCE DUE	✓	228-SERVICE SOON-PM #3 DUE	✓
225-GENERAL MAINTENANCE DUE	✓	229-SERVICE SOON-PM #4 DUE	✓
226-SERVICE SOON-PM #1 DUE	✓	230-SERVICE SOON-PM #5 DUE	✓

Microprocessor alarms	Status	Microprocessor alarms	Status
232-SETPOINT ERROR	X	244-ECONO CALIBRATE ERROR	X
233-MODEL # ERROR	X	245-CAN NOT SAVE SETTING	X
237-FUNCTION PARAMETER ERROR	X	246-EEPROM WRITE FAILURE	X
238-CONFIGURATIONS ERROR	X	248-CONFIG MODE / HP2 ERROR	X
242-DIS PRESS CALIBRATE ERROR	X	249-MICROPROCESSOR ERROR	X
243-SUCT/EVAP CALIBRATE ERROR	X		X

10.   MAINTENANCE

A comprehensive maintenance program will help to insure that the unit continues to operate reliably. Such a maintenance program will also help to control operating costs, increase the unit's working life, and improve performance.

NOTE

All maintenance services must be done by a technician trained on Carrier products respecting all safety and quality standards of Carrier.

10.1.   Oil change intervals

First 400 hours, thereafter as listed below :

CAUTION

The maximum oil change interval is 1 year (for either approved oil).The only approved synthetic lube oil is Mobil Delvac1.The normal oil change intervals (listed below) should be reduced if the equipment is operated under extreme conditions such as in dirty environments.

ENGINE	API class CD (Hours)	MOBIL DELVAC 1 (Hours)
TV	1500	3000

10.2.   Maintenance schedule

| Unit	Hours	400	1500	3000	4500	6000	7500	9000	10500	12000
Vector 1800 & 1800 Mt°	Service initial	x								
	Service A		x	x	x	x	x	x	x	x
	Service B			x		x		x		x

Service initial	Check the tightness of bolts and screws and that the unit is correctly fastened onto the box
	Tighten all electrical connection in control box
	Drain the engine oil, replace oil filter
Service A	Pretrip inspection
	Drain the engine oil, replace oil filter
	Replace air filter element
	Replace fuel filter
	Clean up condenser & radiator coil
	Check defrost system
	Tighten all electrical connection in control box
Service B	Operation of Service A,
	Calibrate defrost air switch
	Check water pump bearing and belt
	Check fuel pump filter
	Check starter condition
	Check and adjust nozzle injectors
	Grease control rods of diesel engine
	Check level of coolant, refrigerant and battery electrolyte
	Check battery charger charge
	Check regulation operation (cool-nul-heat)
	Check manual/automatic defrost operation
	Check operation of solenoid
	Check klixon cut out
	Check motor speed in high speed and low speed
	Check fuel hoses
	Check coolant hoses
	Tighten all electrical connection in control box
EVERY TWO YEAR	Replace filter drier
	Replace compressor oil - only use Ester oil (POE) approved by Carrier Transicold
	Replace refrigerant (type : R404A)
	Tighten all electrical connection in control box
EVERY FIVE YEAR or 10000 hours	Replace all fuel hoses

10.4. Recommended oil

Engine oil : The oils recommended for use in your refrigeration unit must comply with the American Petroleum Institute's (API) SG/CD rating. The use of oil of the proper weight (viscosity) is also essential. The following chart indicates the SAE Weight Rating of the oil to be used in various climates :
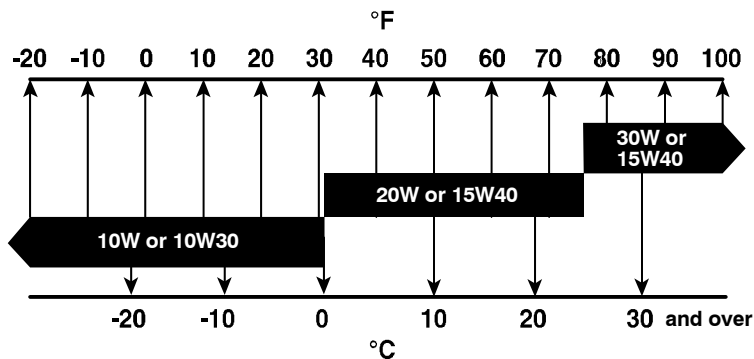
The following oils are accepted for use in Europe with the unit.

RECOMMENDED OILS			
CARRIER	CARRIER TD+15W-40	LABO	MEGAMAXI 15W-40
AGIP	SIGMA TURBO SHPD 15W-40	MOBIL	DELVAC SHC 15W-40
ANTAR	GRAPHITE R 15W-40		DELVAC 1400 SUPER
BP	VANELLUS C3 EXTRA 15W-40	OPAL	OPALGET D 500 15W-40
	VANELLUS FE 15W30	ORLY	TURBO 2002 15W-40
ELF	MULTIPERFORMANCE4D 15W-40	POLAROIL	POLATRUCK 15W-40
	PERFORMANCE TROPHY 15W-40	RENAULT	KMX 2 PLUS 15W-30
FIAT	URANIA TURBO 15W-40		KMX 2 PLUS 15W-40
FINA	KAPPA LDO 15W-40		MV5 "EUROPE"
	KAPPA TD PLUS 15W-40	TEXACO	URSA SUPER TD 15W-40
	KAPPA EXTRA 15W-40	TOTAL	RUBIA TIR MAX 15W40
HAFA	DETERGENTE 4DM 15W-40	SHELL	MYRINA TX 15W-40
	STRADEX 900 ECO 15W-40		MYRINA T 15W-30
	SYNTHIDEX ECO 15W-40	UNIL	SUPER ROC 3D 15W-40
IGOL	RALLYE TURBO 4E 15W-40		TURBO DX 15W-40
	RALLYE TURBO 4E LD 15W-40	YACCO	SM 4D + 15W-40
IMPERATOR	RAFF SUPER HPDO 15W-40		

11.   A.T.P. EUROPE REGULATION EXTRACT

(Date: March 1974)

Approval of vehicles intended for the carriage of perishable goods.

Before putting a refrigerated vehicle into service, it is necessary to have it approved by the Regional Health Department.

CHARACTERISTICS OF VEHICLES USED FOR CARRYING PERISHABLE GOODS; REFRIGERATION UNIT.

The refrigeration unit is an insulated unit with a cooling system which makes it possible, with a mean outside temperature of +30˚C, to lower the temperature inside the empty body and to maintain this low temperature in the following way:

CLASS A	Refrigeration unit furnished with a cooling system whereby a temperature between +12˚C and 0˚C inclusive can be chosen.
CLASS B	Refrigeration unit furnished with a cooling system whereby a temperature between +12˚C and –10˚C inclusive can be chosen.
CLASS C	Refrigeration unit furnished with a cooling system whereby a temperature between +12˚C and –20˚C inclusive can be chosen.

The cooling capacity of a unit is determined by a test carried out in one of the approved testing stations and ratified by an official report.

Note: The "K" factor of bodies intended to be classified as C must be equal to or lower than 0.4 W/m2˚C.

SIGNS, IDENTIFICATION MARKS AND PLATES TO BE ATTACHED TO REFRIGERATION UNITS

Refrigeration Plate : this reference must be followed by identification marks according to the following list:

Standard refrigeration unit Class A   FNA

Reinforced refrigeration unit Class A   FRA

Reinforced refrigeration unit Class B   FRB

Reinforced refrigeration unit Class C   FRC

In addition to the above identification marks, the date (month and year) of expiry of the approval certificate must be indicated.

Example :
FRC
6–2004

6 = month (June)
2004 = year

VERY IMPORTANT

Regularly check the expiry date of the approval certificate. During transport, the approval certificate or provisional certificate should be shown on request of qualified agents. To have an insulated unit approved as a refrigeration unit, an application to modify the approval certificate should be sent to the regional health office.

12. 24H ASSISTANCE

At Carrier Transicold we're working hard to give you complete service when and where you need it. That implies a worldwide network of dealers and available an emergency service. These service centers are manned by factory-trained service personnel and backed by extensive parts inventories that will assure you of prompt repair.

Should you encounter a unit problem with your refrigeration unit during transit, follow your company's emergency procedure or contact the nearest Carrier Transicold service center. Consult the directory to locate the service center nearest you. This directory may be obtained from your Carrier Transicold dealer.

If you are unable to reach a service center, call Carrier Transicold's 24 Hour Assistance :

In Europe, please use the following free phone numbers from :

A	AUSTRIA	0800 291039
B	BELGIUM	0800 99310
CH	SWITZERLAND	0800 838839
D	GERMANY	0800 1808180
DK	DENMARK	808 81832
E	SPAIN	900 993213
F	FRANCE	0800 913148
FIN	FINLAND	0800 113221
GB	GREAT BRITAIN	0800 9179067
GR	GREECE	00800 3222523
H	HUNGARY	06800 13526
I	ITALY	800 791033
IRL	IRELAND	1800 553286
L	LUXEMBURG	800 3581
RUS	RUSSIA	810 800 200 31032
N	NORWAY	800 11435
NL	THE NETHERLANDS	0800 0224894
P	PORTUGAL	8008 32283
PL	POLAND	00800 3211238
S	SWEDEN	020 790470

From other countries or direct : +32 9 255 67 89

In Canada or United States, call 1 - 800 - 448 - 1661.

When calling, please have the following information ready for fastest service :

- Your name, the name of your company, and your location.
- A telephone number where you can be called back.
- Refrigeration unit model number and serial number.
- Box temperature, set-point and product.
- Brief description of the problem you are having, and what you have already done to correct the problem.

We will do everything we can to get your problem taken care of and get you back on the road.